

What is claimed is:

1. A motor-driven injection molding apparatus comprising:

5 a center fixed plate supporting a stationary mold of metal mold;

a movable mold plate movably arranged so as to approach to and deviate from said center fixed plate and supporting a movable mold of the metal molds;

10 a slide guide receiving a lower portion of the movable mold plate and slidably guiding said movable mold plate in said approaching and deviating directions;

ball screws for opening and closing the mold, said ball screws extending in a cantilever state from said center fixed plate toward said movable mold plate;

15 an electric motor for opening and closing the mold, said electric motor rotating said ball screws in the cantilever state in both of forward and backward directions, and approaching said movable mold plate to said center fixed plate and deviating said movable mold plate from said center fixed plate; and

20 an electric motor for injecting, said electric motor being arranged in an opposite side to said movable mold plate with respect to said center fixed plate in such a manner as to oppose to a mold opening and closing mechanism having the structure mentioned above, and driving a molten resin into said metal  
25 mold in a mold clamping state of said stationary mold and said

movable mold by approaching said stationary mold plate and said movable mold plate.

2. A motor-driven injection molding apparatus comprising:

5           a center fixed plate supporting a stationary mold of metal mold;

          a movable mold plate movably arranged so as to approach to and deviate from said center fixed plate and supporting a movable mold of the metal molds;

10           a slide guide receiving a lower portion of the movable mold plate and slidably guiding said movable mold plate in said approaching and deviating directions;

          two ball screws for opening and closing the mold, said ball screws extending in a cantilever state from said center fixed  
15   plate toward said movable mold plate and engaging with said movable mold plate at two points on opposing corners of the movable mold plate;

          an electric motor for opening and closing the mold, said electric motor rotating said ball screws in the cantilever state in  
20   both of forward and backward directions, and approaching said movable mold plate to said center fixed plate and deviating said movable mold plate from said center fixed plate; and

          an electric motor for injecting, said electric motor being arranged in an opposite side to said movable mold plate with  
25   respect to said center fixed plate in such a manner as to oppose

to a mold opening and closing mechanism having the structure mentioned above, and driving a molten resin into said metal mold in a mold clamping state of said stationary mold and said movable mold by approaching said stationary mold plate and  
5 said movable mold plate.

3. The motor-driven injection molding apparatus as claimed in claim 1, wherein the rotation driving force of said mold opening and closing electric motor is transmitted to a portion of said ball  
10 screw in the cantilever state protruding to an outer side from said movable mold plate, whereby said ball screw is rotated in the cantilever state.

4. The motor-driven injection molding apparatus as claimed in  
15 claim 1, wherein said injection mechanism includes:

an injection side movable plate arranged so as to freely approach to and deviate from said center fixed plate or another fixed plate and supporting a plunger driving the molten resin into said metal mold;

20 a guide mechanism guiding the injection side movable plate in said approaching and deviating direction;

an injecting ball screw extending from said center fixed plate or the another fixed plate to a side of said injection side movable plate and screwing with the injection side movable  
25 plate; and

an injecting electric motor rotating said ball screw in both forward and backward directions so as to approach and deviate said injection side movable plate to and from said center fixed plate or the another fixed plate, thereby driving the molten resin  
5 into said metal mold by said plunger.

5. The motor-driven injection molding apparatus as claimed in claim 4, wherein said injecting ball screw extends from said center fixed plate or the another fixed plate to a side of said  
10 injection side movable plate so as to be screwed with the injection side movable plate, the portion protruding from the injection side movable plate is supported by the injection side fixed plate, or is set in a cantilever state with no injection side fixed plate, and the rotation driving force of said injecting  
15 electric motor is transmitted to said protruding portion of the ball screw so as to rotate said ball screw.

6. The motor-driven injection molding apparatus as claimed in claim 4, wherein said injection side movable plate is structured  
20 so that two said ball screws are screwed on one pair of opposing corners, two guiding tie bars pass on another one set of opposing corners, and end portions of the tie bars and said ball screws are supported by the injection side fixed plate.

25 7. The motor-driven injection molding apparatus as claimed in

claim 4, wherein said injection side movable plate is structured so that two said ball screws are screwed on one set of opposing corners, no tie bar exists as the guide mechanism of said injection side movable plate, a slide guide receiving the lower  
5 portion of said injection side movable plate and slidably guiding said movable plate in said approaching and deviating direction is provided as the guide mechanism, the portion protruding from said injection side movable plate of said ball screw is set in a cantilever state, and the rotation driving force of said injection  
10 motor is transmitted to the portion.